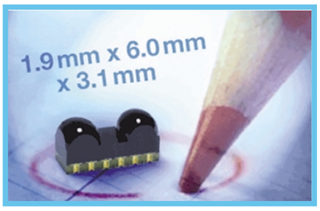
Vishay Intertechnology's smallest footprint SIR transceiver



Vishay's transceiver frees space

The new TFBS4711 transceiver measures 1.9mm high, 3.1mm deep and only 6mm long - a reduction in length of more than 15% compared with other SIR transceivers on the market. With the new transceiver, design engineers can now add short-range IR connectivity to smaller and thinner handheld systems with greater flexibility, enabling mobile phones and PDAs to transfer digital images & data files or to pay for goods using the new IR Point andPay application.

With each new feature added to handheld devices, designers are challenged to find space for interface connectors, buttons, antennas, and displays. With its 6mm length and 6-pin interface, the TFBS4711simplifies this allowing designers to reduce the PCB area needed for IR transceivers and reduce the size of the ambient light-filtering window.

Smaller window requirements give packaging engineers flexibility.

The 1.9 mm height allows the transceiver to be placed on either side of the circuit board. The advantages, combined with a total implementation cost 10x less than other forms of wireless communication, frees designers to add features, with less space concern.

InGaP and GaAs LET spreads light

Professors Nick Holonyak and Milton Feng at University of Illinois have developed and made a Light-Emitting Transistor. Holonyak invented the first practical LED and the first semiconductor laser operating in the visible spectrum. The LET discovery was reported in the journal of *Applied Physics Letters.*

Researchers fabricated the LET in the university's Micro and Nanotechnology Laboratory from InP and GaAs.

" We have demonstrated light emission from the base layer of an HBT, and showed that the light intensity can be controlled by varying the base current," says Holonyak. "It is not yet possible to say what all the applications will be. But a light-emitting transistor opens up a rich domain of integrated circuitry and high-speed signal processing that involves both electrical signals and optical signals."

The recombination process in InGaP and GaAs materials also creates infrared photons. "In the past, this base current has been regarded as a waste current that generates unwanted heat. We've shown that for a certain type of transistor, the base current creates light that can be modulated at transistor speed.

In retrospect, we could say the groundwork for this was laid more than 56 years ago with John Bardeen and Walter Brattain and their first germanium transistor," says Holonyak, who was Bardeen's first graduate student.

" But the direct recombination involving a photon is weak in germanium materials, and John and Walter just wouldn't have seen the light - even if they had looked. If John were alive and we showed him this device, he would have to have a big grin."

Emcore's Xenpak transceiver

Emcore Corporation has launched a new ELX-7100 Xenpak transceiver, compliant with 10GBASE-LX4, the highly versatile wavelength division multiplexing (WDM) format within the IEEE 802.3ae standard for 10 Gigabit Ethernet.

The ELX-7100 is the latest in Emcore's expanding solutions for the data center and central office and built on Emcore's compound semiconductor expertise using own produced lasers and detectors.

The ELX-7100 transceiver provides a reach of 300 meters over standard multimode fiber, including the widely deployed "FDDI grade" legacy multimode fibers, and 10km over single-mode fiber. In addition, an extended-reach version of the ELX-7100 will reach 40km over singlemode fiber.

Tom Hausken, director of Optical Components at Strategies Unlimited, says: "Long wavelength transceivers, combined with the strong growth of 10Gbps switching for LANs and SANs, will drive the 10 Gbps 1310nm transceiver market well beyond $500m by 2008."

The ELX-7100 transmits data over 1275nm, 1300nm, 1325nm, and 1350nm, by optically combining the outputs of four uncooled Emcore DFB lasers, allowing the ELX-7100 to be very competitive in cost compared to Serial 10 Gigabit Ethernet solutions based on 10GBASE-LR.

In the receive subsection, these four wavelengths are optically demultiplexed and converted to electrical output signals through internally produced detector arrays.

The product provides a two-wire management data I/O interface, compliant with both IEEE802.3ae clause 45 and the Xenpak MSA, and it is hot pluggable for convenient use at the system front panel.

Hybrid for LEDs and solar cells

Ohio State University engineers have overcome a major barrier in the manufacture of quality LEDs and solar cell materials.

Steven Ringel, professor of electrical engineering and colleagues have created special hybrid materials that are virtually defect-free – an important first step for making ultra-efficient electronics in the future.

Ringel directs Ohio State's Electronic Materials and Devices Laboratory, where he and his staff grow thin films of III-V semiconductors. Because III-V materials absorb and emit light much more efficiently than silicon, the materials bridge the gap between traditional silicon computer chips and light-related technologies, such as lasers, displays, and fiber optics.

Researchers have tried for years to combine III-V materials with silicon, with limited success. Now Ringel has succeeded in producing the combination with record quality.

His current material design consists of a substrate of silicon topped with III-V materials such as gallium and arsenide, with hybrid SiGe layers sandwiched between. The substrate is 0.7mm thick, and the GaAS layer only 3 micrometers.

Key to Ringel's strategy is the idea of a 'virtual substrate' - a generic chip-like surface that would be compatible with many different kinds of technologies, and could easily be tailored to suit different applications on a single platform.